

**REMARKS**

In the Office Action, claims 1-8 and 29-36 were rejected. By the present Response, claims 1, 29-30 and 33 are amended and claims 5, 9-28 are canceled. New claims 37-44 are added. Upon entry of the amendments, claims 1-4, 6-8 and 29-44 will remain pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

**Rejections Under 35 U.S.C. § 102**

The Office Action summarizes claims 1-4 and 7-8 and 29-35 as rejected under 35 U.S.C. §102(b) as being anticipated by Schroeder et al. (U.S. Patent No. 4,095,205, hereafter "Schroeder").

By the present Response, independent claims 1, 29 and 33 are amended and claims 9-28 are canceled. Further new claims 37-44 are added. Based upon the amendments, independent claims 1, 29, 33, 38 and 42 and the claims depending therefrom are believed to be patentable for the reasons summarized below.

**Claim 1**

Claim 1 has been amended to include recitations regarding the second layer of the insulation unit being a non-polymeric layer. Amended claim 1 recites an insulation system for an oil filled environment. The insulation system includes a plurality of insulating units. Each of the insulating units includes a first layer of polymeric material and a second layer of a non-polymeric material. The insulating units are positioned with respect to each other such that second layer of non-polymeric material of one insulating unit is adjacent to a first layer of polymeric material of another insulating unit. The recitations fully are supported in the specification. *See, e.g.*, Paragraph 0036- 0037.

The Examiner argued that Schroeder discloses a layer insulation system for an oil filled environment. The Examiner further stated that the Schroeder layer insulation

system includes a plurality of insulating units, each of the plurality of units comprising first and second layers of insulating material. Further, at least one of the first and second layers is said to include a polymeric material, the insulating units being positioned with respect to each other such that the second layer of one insulating unit is adjacent to the first layer of another insulating unit. The polymeric material is of Schroeder is polyethylene terephthalate.

Applicants respectfully submit that Schroeder does not teach an insulating unit having a non-polymeric material. The present application teaches the use of alternating layers of polymeric and non-polymeric material in the insulation system. For example, paper insulation material is employed as the non-polymeric material. The alternating polymeric material with the non-polymeric material provides for use of less main insulation material while maintaining the same dielectric breakdown strength as a larger thickness of paper insulation alone. Furthermore, the alternating materials help to distribute the dielectric stress throughout the insulation system. *See, e.g.,* Paragraph 0037.

The cited paragraph reads:

In one aspect, it is believed that alternating polymeric material with paper insulation material provides for the use of less main insulation material while maintaining the same dielectric breakdown strength as a larger thickness of paper insulation material alone. This leads to further cost savings in the use of less copper and other magnetic materials. Further, the alternating materials help to distribute the dielectric stress throughout the insulation system. The paper insulation material is typically more readily impregnated by the oil of the oil filled environment than is the polymeric material. The alternating layers of paper insulation material allow for the proper impregnation of the oil throughout the insulation system while taking advantage of the higher dielectric breakdown strength of the polymeric materials. Proper impregnation of the oil can, in part, prevent large concentrations of dielectric stress in areas of air that may be trapped between layers. In another

example, proper impregnation of the oil may be ensured by the use of polymeric materials that have patterns thereon. The patterns provide a roughness on the polymeric surface that allows for oil impregnation between adjacent polymeric layers. Mechanical strength may also be improved by the use of commercially available paper insulation materials that have epoxy patterns thereon which can be used to adhere the alternating polymeric and paper layers together.

Applicants respectfully submit that Schroeder teaches the insulation system including a plurality of layers of polyethylene terephthalate film, which are stacked to the desired thickness in order to provide the necessary electrical insulating characteristics for a transformer. *See, e.g.*, column 7, lines 29-37. Schroeder does not teach alternating layers of polymeric and non-polymeric material. Moreover, it is not believed that the Schroeder arrangement can attain the benefits of the claimed system discussed above.

Applicants respectfully submit that Schroeder cannot, therefore, anticipate independent claim 1 or its dependent claims. Reconsideration and allowance of these claims are therefore requested.

**Claim 29**

Claim 29 has been similarly amended to include the recitations regarding the insulation unit including a non-polymeric layer. The amended claim 29 recites an insulation system for an oil filled environment. The insulation system includes a plurality of insulation units, each insulation unit includes a polymeric layer and a non-polymeric layer. The insulation units are stacked such that each non-polymeric layer is disposed between two polymeric layers of the insulation system. Further, the insulation system is an insulation selected from the group consisting of layer insulation, main insulation, spacer insulation, end rings and any combinations thereof.

As discussed above with reference to claim 1, Schroeder teaches the insulation system including a plurality of layers of polyethylene terephthalate film. Schroeder does not teach alternating layers of polymeric and non-polymeric material. Therefore, Applicants submit that independent claim 29 is allowable and respectfully request the Examiner to reconsider rejection of the claim.

### **Claim 33**

Claim 33 has been similarly amended to include recitations regarding alternating layers of polymeric and non-polymeric material. The amended claim 33 recites an insulation system for an oil filled environment. The insulation system includes a plurality of alternating layers of polymeric and a non-polymeric materials. As discussed above with reference to claims 1 and 29, Schroeder does not teach alternating layers of polymeric and non-polymeric material in the insulation system.

Therefore, Applicants submit that independent claim 33 is allowable and respectfully request the Examiner to reconsider rejection of the claim.

### **Dependent Claims**

Claims 2-4 and 6-8 depend from independent claim 1. Claims 30-32 and 34 depend from independent claims 29 and 33, respectively. Applicants respectfully submit that inasmuch as independent claims 1, 29 and 33 are allowable, claims 2-4, 6-8, 30-32 and 34 are allowable at least by virtue of their dependence from an allowable base claim.

### **Rejections Under 35 U.S.C. § 103**

The Office Action summarizes claims 5 and 36 as rejected under 35 U.S.C. §103(a) as being unpatentable over Schroeder et al. in view of Fujita et al. (U.S. Patent No. 4,096,313).

By the present Response, claim 5 has been canceled. With regard to dependent claim 36, this claim depends directly from allowable claim 33, and is therefore considered to be allowable at least by virtue of their dependency from an allowable base claim.

**New Claims 37-44**

Claims 37-44 have been added, and are believed to be allowable for the same reasons as claims 1, 29 and 33. Independent claim 38 recites an insulation system for an oil filled environment. The insulation system includes a plurality of insulation units, each of the plurality of insulating units comprising a first layer of polymeric material and a second layer of paper material. The insulating units are positioned with respect to each other such that second layer of paper material of one insulating unit is adjacent to first layer of polymeric material of another insulating unit.

As discussed above, Schroeder does not teach alternating layers of polymeric and non-polymeric material in the insulation system. Furthermore, Schroeder does not teach the use of paper material as the second layer in the insulation units. Therefore, Applicants submit that independent claim 38 is allowable.

Similarly, independent claim 42 recites an insulation system for an oil filled environment. The insulation system includes a plurality of insulation units, each insulation unit including a polymeric layer and a paper layer. The insulation units are stacked such that the paper layer is disposed between two polymeric layers of the insulation system. Further, the insulation system is an insulation selected from the group consisting of layer insulation, main insulation, spacer insulation, end rings and any combinations thereof.

The prior art does not teach such an arrangement. Therefore, Applicants submit that independent claim 42 is allowable.

Claims 39-41 and 43-44 depend from independent claims 38 and 42, respectively. Applicants respectfully submit that insomuch as independent claims 38 and 42 are allowable, claims 39-41 and 43-44 are allowable at least by virtue of their dependence from an allowable base claim.

**Conclusion**

In view of the remarks and amendments set forth above, Applicants respectfully request allowance of the pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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